

**AMENDMENTS TO THE CLAIMS**

This listing of claims below will replace all prior versions, and listings, of claims in the application:

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**Listing of the Claims:**

1. (Currently Amended) An analog to digital converter for converting an analog signal  
10 into a digital signal, comprising:  
an input circuit;  
a reference circuit for generating a series of reference signals;  
a first converter connected to said input circuit and said reference circuit for  
comparing said input signal to said reference signals for determining the  
15 most significant digital ~~values~~ value of said input signal; and  
a second converter connected to said input circuit and said reference circuit and  
said first converter, said second converter further comprising a charge  
sharing pipelined chain converter for comparing said input signal to said  
reference signals for determining the least significant digital value of said  
20 input signal;  
~~wherein said input circuit includes a sample and hold circuit for storing the input  
signal;~~  
wherein said input circuit includes a sample and hold circuit for storing the input  
signal during the period said first converter is determining the most  
25 significant digital value of said input signal; and

said sample and hold circuit storing the input signal during the period said second converter is determining the least significant digital value of said input signal.

5 2. (Original) An analog to digital converter for converting an analog signal into a digital signal as set forth in claim 1, wherein said reference circuit includes a voltage divider for generating a series of reference signals.

10 3. (Original) An analog to digital converter for converting an analog signal into a digital signal as set forth in claim 1, wherein said first converter comprises a flash converter for determining the most significant digital value of said input signal.

15 4. (Cancelled)

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5. (Original) An analog to digital converter for converting an analog signal into a digital signal as set forth in claim 1, wherein said first converter determines only the most significant digital value of said input signal; and a second converter determines only the least significant digital value for said most significant digital value determined by said first converter.

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6. (Original) An analog to digital converter for converting an analog signal into a digital signal as set forth in claim 1, wherein said first converter determines only the most significant digital value of said input signal;

a second converter determines only the least significant digital value for said most significant digital value determined by said first converter; and  
a multiplicity of said the least significant digital values being equal to one of said most significant digital values.

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7. (Original) An analog to digital converter for converting an analog signal into a digital signal as set forth in claim 1, including an improved comparator circuit for comparing the input signal to the reference signal.

10 8. (Original) An improved compensation circuit for improving the accuracy of an operating circuit, comprising:

an array of capacitors for generating a variable binary internal signal to provide a wide range of compensation for the operating circuit;

an array of memories;

15 an array of switches interconnecting said array of capacitors to said array of memories; and

said array of switches interconnecting selective capacitors of said array of capacitors to selected memories of said array of memories for improving the accuracy of an operating circuit.

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9. (Currently Amended) An improved compensation circuit for improving the accuracy of an operating circuit as set forth in ~~claim 17~~ claim 8 wherein said compensation circuits compensates for integral non-linearity of the total operating circuit as well as ~~for compensating~~ for differential non-linearity of each component of the total operating circuit.

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10. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal, comprising:

an input circuit;

5 a reference circuit for generating a series of reference signals;

a first converter connected to said input circuit and said reference circuit for comparing said input signal to said reference signals for determining the most significant digital values of said input signal; and

10 a second converter connected to said input circuit and said reference circuit and said first converter, said second converter further comprising a charge sharing pipelined chain converter for comparing said input signal to said reference signals for determining the least significant digital value of said input signal.

15 11. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 4~~ claim 10, wherein said input circuit includes a sample and hold circuit for storing the input signal.

20 12. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 4~~ claim 10, wherein said input circuit includes a sample and hold circuit for storing the input signal during the period said first converter is determining the most significant digital value of said input signal; and

said sample and hold circuit storing the input signal during the period said second converter is determining the least significant digital value of said input signal.

5 13. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 1~~ claim 10, wherein said reference circuit includes a voltage divider for generating a series of reference signals.

10 14. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 1~~ claim 10, wherein said first converter comprises a flash converter for determining the most significant digital value of said input signal.

15 15. (Cancelled)

16. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 1~~ claim 10, wherein said first converter determines only the most significant digital value of said input  
20 signal; and

a second converter determines only the least significant digital value for said most significant digital value determined by said first converter.

17. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 1~~claim 10, wherein said first converter determines only the most significant digital value of said input signal;

- 5     a. second converter determines only the least significant digital value for said most significant digital value determined by said first converter; and
- a multiplicity of said the least significant digital values being equal to one of said most significant digital values.

10   18. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 1~~claim 10, including an improved comparator circuit for comparing the input signal to the reference signal.

15   19. (Currently Amended) An analog to digital converter for converting an analog signal into a digital signal as set forth in ~~claim 1~~claim 10, including an improved digital calibration circuit for improving the accuracy of the analog to digital converter.